

Program **E**valuation in **V**ocational **R**ehabilitation:

OBSERVATIONS

U.S. DEPARTMENT OF EDUCATION
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FOREWORD

You may have noticed editorial and format improvements in the last edition of this publication. These have occurred through closer communication and sharing of skills among the Department of Education and those six states* involved with the West Virginia RTC. We hope that with future publication of "Observations" the quality of output will be further enhanced.

Thus far there has been little feedback from you, the reader. We wonder whether these articles have been helpful to you and would appreciate your comments and criticisms. We hope you will share your views with the West Virginia RTC staff by forwarding them to Richard Nida.

Our mailing list is new and, therefore, undergoing constant revision and updating. We suspect there are many in our intended readership who are not on our list. If you are aware of such omissions we ask that you send the new names and addresses to the West Virginia RTC. If the publication is being sent to someone no longer in your office, please forward it to them.

Finally, we hope you will share your copy with your associates so that they can avoid the pitfalls and enjoy the satisfactions of setting a program evaluation project on a successful course.

James E. Taylor, Ph.D.
Project Officer, RSA

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Federally-funded contract numbers:

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PREFACE

The following set of manuscripts documents in part the experience of six Model Evaluation Units (MEUs) in state agencies for vocational rehabilitation. The three-year project began in October of 1978 when MEUs were established in the following agencies:

1. Delaware Division of Vocational Rehabilitation
2. Michigan Bureau of Rehabilitation
3. Mississippi Vocational Rehabilitation for the Blind
4. Oregon Department of Human Resources
5. Pennsylvania Bureau of Vocational Rehabilitation
6. Virginia Department of Rehabilitative Services

The MEUs were funded by the Rehabilitation Services Administration and have been assisted in their developmental efforts by the West Virginia Rehabilitation Research and Training Center as coordinating contractor for the project.

The manuscripts in this edition focus upon the expanded capacity for evaluation that the MEUs have developed. The Delaware agency's manuscript, "Data System Operation," describes the progress of that agency in the area of computerization. In its manuscript, "Developing Capacity for Data Analysis for Program Evaluation," the Michigan MEU details its experience in acquiring appropriate data processing resources. Another manuscript, "Computer Acquisition and Operation," describes yet another experience in trying to solve data processing problems--that of the Mississippi MEU. The Oregon agency's manuscript, "Word Processing Applications of the Oregon Model Evaluation Unit," discusses the many uses to which the agency has put its new word processing system. In "Evaluation Section Library," the Pennsylvania MEU explains in detail how it went about developing a technical assistance center. And the Virginia MEU in "Planning for an Independent Living Program in Virginia" describes how it is planning to evaluate the present system for delivering comprehensive rehabilitation services for independent living and to develop recommendations for expansion and improvement. Finally, the West Virginia Research and Training Center has also contributed an article, "A Systematic Approach to Training Needs Assessment for Vocational Rehabilitation Program Evaluators," that explains how a staff training needs assessment can be completed for a program evaluation unit.

Richard S. Nida, Ph.D.
Project Officer

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DATA SYSTEM OPERATION

Vincent Finelli, Systems Analyst
Delaware Division of Vocational Rehabilitation

The Model Evaluation Contract has made it possible for Delaware Division of Vocational Rehabilitation (DVR) to make great strides in the area of computerization. Prior to the Model, DVR's daily updating turnaround time averaged approximately 15 days (see Flowchart). Compared to some batch systems this might seem an acceptable turnaround time, but to DVR with its Management by Objectives (MBO) approach, faster turnaround time was required. While operating within the framework of the Model Contract, dollars were not unlimited, and were therefore a constraint as to how equipment would be purchased and utilized to speed up turnaround time. As seen in the flowchart, the field input preparation for the daily update consumed three days for management signatures, approvals, administration, etc. Mailing from the field via the State-Operated Pony Express required, on the average, another three days. Coding field input into a format ready for keypunching required one full day. Mailing from Headquarters to the Department of Labor's IBM computer (ten miles away) for processing consumed one-half day. Actual computer keypunching, updating, printing, and bursting output utilized three days and another half-day was required for the mail trip to return the computer processed updates to DVR. Error checking and distribution preparation by DVR's Input/Output Clerk required one full day. An finally, the mailing from Headquarters back to the field required three days. One complete cycle of the daily update required 15 working days.

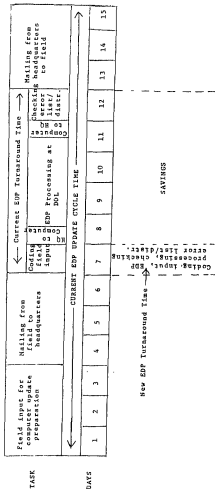
Within the constraints of the Model Contract, where was the best place to target efforts to improve turnaround time without disrupting field staff and working with Delaware's policy against proliferation of computer equipment outside of Central Data Processing?

The most cost-effective place DVR found to improve daily turnaround time was the area of day number 7 through day number 12, inclusive. DVR's analysis showed that with an on-line capability, the block marked "Current EDP Turnaround Time" (six days) could be reduced to one day which is shown in the block marked "New EDP Turnaround Time." It was expected that savings would come from eliminating coding, mailing to and from the computer, and that processing and checking error lists would be greatly reduced.

Aside from the on-line information system of the Delaware State Police, Delaware State Government had no capability for supporting on-line, real time operations. DVR therefore turned to the University of Delaware's Burroughs B-7700 time-sharing system. This system was perfectly at home with the hybrid on-line, real time remote batch system that DVR was seeking. Cost justification was in DVR's favor as analysis showed that the agency could maintain data processing at approximately 50 percent of what it was presently paying and have on-line, real time capability as well. As a

FLOWCHART

FLOWCHART OF AVERAGE TURNAROUND TIME FOR DWR-313
 COMPUTER UPDATING FROM FIELD TO HEADQUARTERS TO DOL SEVAK
 FOR COMPUTER PROCESSING TO HEADQUARTERS FOR DATA UPDATE
 CHECKING AND RETURN TO FIELD



FLOWCHART #1

sidelight, along with on-line came SPSS, Reporter II, etc. These were added benefits of the Burroughs system that DVR could capitalize on once a conversion from IBM to the Burroughs was made. In fact, that conversion was made readily and the new system is running quite smoothly.

DVR's Input/Output (I/O) operation staff had to learn new ways of data processing. All of the hand transcribing from one document to another was now obsolete. Eliminating the six days at the Department of Labor (DOL) meant no more "slack" time and no more putting off report distribution and keying until tomorrow as backlogs would result. The jobs of keying, printing, and bursting of reports which were formerly the jobs of the DOL's Computer site were now the responsibility of the I/O operator at DVR. Time budgeting throughout the training process was critical during the beginning phases of the Burroughs implementation. The new I/O skills involved the use of printing terminal, display terminal, dial-up acoustic coupler, CANDE (Burroughs editing language), creating computer files, merging files, editing files, titling files, signing on and off, etc. This is very complex for someone who has had no computer experience.

After the few initial bugs of conversion were ironed out and training sessions of field input and I/O staff were conducted, the statistical computer system ran smoothly.

The systems operation looks much like the "old" statistical computer system except currently DVR now has three computer terminals and associated acoustic couplers. Two of the terminals are 120-characters-per-second DEC LA-120's and the third terminal is the Hewlett-Packard video display terminal HP 2621A. Additionally, DVR has a CPT-8000 word processor which may be used as a backup terminal for the video display or printing terminal.

The I/O operator receives, batches, keys, edits, runs updates, maintains files, maintains log book, checks edit reports, prints output, and answers field questions for the statistical computer system as compared to the "old" system where batching, coding, mailing, edit checking and distributing were the primary functions.

In Delaware, the on-line, real time has enabled DVR to drastically cut EDP turnaround time from six days to approximately one to two days, reduce data processing costs, and provide more accurate and timely information to the user.

The on-line system also provides capability for special studies such as those which are currently being conducted in COBOL as well as SPSS to support Management's decision making.

Perhaps the most significant addition DVR has made to its EDP system is an on-line, interactive inquiry program which allows a user to efficiently display on a CRT a client's computer record by simply entering the Social Security number.

DEVELOPING CAPACITY FOR DATA ANALYSIS FOR PROGRAM EVALUATION
MICHIGAN'S EXPERIENCE

James Nuttall, M.A., Program Evaluator
Michigan Bureau of Rehabilitation

Rehabilitation agencies vary widely in their capacity to process data. Some are still heavily dependent on manual processes while others have acquired very sophisticated electronic equipment.

Michigan's Bureau of Rehabilitation (MBR), like many other state agencies, has a large central data processor which generates routine reports. However, there has been little flexibility to perform technical analysis of the type desired by the Program Evaluation Unit. Therefore, one of the objectives of the Michigan Model Evaluation Unit was to acquire appropriate data processing resources. The report which follows describes our efforts and is presented as an illustration which may be of interest to other evaluation units with a similar problem.

MBR: DATA ANALYSIS NEEDS

As part of our ongoing activities, the Program Evaluation Unit is responsible for a number of reports which require special data analysis. These reports can be divided into two types; i.e., the routine and the specialized. Our routine reports generally are quarterly or annual. These reports summarize client characteristics from the R-300 data, client follow-up information from the follow-up report, and counselor productivity reports. Specialized reports, however, occur as a response to a specific request by agency management or as part of our investigative research effort.

The annual reports are generally of a large, if not massive nature. They require the summarization of the year's activity of clients or of counselors. Frequently these reports are presented for input into the legislative process, for public and Bureau information, or as a Federal requirement. Thus, the data are usually presented in a straightforward and simplified manner. This often requires summary statistics in the form of frequencies, percentages, and graphic displays. Generally these reports take a good deal of time to prepare in spite of simplified formats which are often standardized.

The specialized reports, on the other hand, do not have a standardized format. They involve data of a more specific nature. The data generally require more preparation and a greater variety of statistical reduction. At times these reports may involve the same data bases as the annual reports; i.e., R-300 data or client follow-up information. Examples of this type of reports are an analysis of client demographics by geographic area, severity of handicap, or income at placement.

But with increasing frequency, specialized reports are requiring the collection and analysis of data tailored to meet the specific issues involved. For example, such tasks have involved the development of case goals for MBR counselors and the development of client surveys. In these cases the ready-made data bases collected by the agency's Management Information System do not answer the questions raised by specialized requests.

DATA ANALYSIS AND THE DEPARTMENTAL COMPUTER

For our routine reports, our data analysis is often done by the State of Michigan's Department of Education computer. The department computer and its management are typical of many of the data processing centers in the state. There are no general statistical or data analytic packages available on the system.

All programs placed on this system are written to generate a specific routine report. Any alteration in the format of the report means rewriting sections of the program. Since the computer center is over-loaded and understaffed, any program revision becomes a "major" reprogramming effort. Therefore, one is reluctant to request reprogramming unless the structure of a report is to be altered for an extended period of time.

Most of the data analytic reports generated by the computer center come from the agency's Management Information System. The data base of the MIS contains items such as R-300 items, client costs, SSI costs, SSTF costs, counselor assignments, and MBR budget information.

Routine reports presently generated by the computer give us a frequency breakdown of all R-300 items for the fiscal year, a listing of the number of severe and non-severe clients by diagnostic group, and the calculation of average time in statuses and average costs of services for closure types.

As previously mentioned, these reports summarize data by giving the frequency and percents associated with data items and the calculation of averages in some cases. Such reports have served their purpose well in tracking the basic statistics needed for reporting requirements and the publication of the Bureau's activities. They have also aided in establishing a baseline for many data elements.

However, with the growing pressures towards higher evaluation standards and the management of shrinking resources, our Program Evaluation Unit is asked to supply information and analysis which go beyond the scope of the routine data analysis. Management questions presented to the unit are more frequently of a relational, causal, or predictive nature.

Such questions cannot be answered by the examination of frequencies and percentages. Data must be summarized in a contingency or relational manner. Some contingency tables can be generated by the department

computer but these do not allow for the computation of chi squares, correlations, or summary statistics based upon a correlational analysis; i.e., regression, factor analysis, or significant tests between groups.

Examples of predictive questions presently being asked are as follows:

- What would counselor productivity be (as measured by 26, 28, and 30 closures) if the client caseload were all severely disabled? (Statistical Modeling)
- Are there any predictive variables in the present data base which will tell us at intake how much a given case will cost? (Predictive Model)
- What is the relationship of time in service statuses and the clients' reported effectiveness of our service? (Causal Model)

EVALUATION PROGRAM NEEDS

The growth of program evaluation has pushed us towards expanding our data processing capability. What are the basic requirements for meeting our expanded evaluation capacity? The answer for meeting the requirements of data analysis closely fits the data processing cycle itself. This cycle is data input (preparation), data retrieval (storage), data analysis (statistical computation), and timely output (turn-around)--as well as cost effectiveness. To handle these needs we began to search for additional computer capacity to meet our unit's needs.

In searching for a data analytic system we concluded that we wanted flexible input alternatives. The very small surveys done by our group could be placed on a computer by an on-line terminal. Larger projects might require key-punching on card by the departmental computer center. Then there was the availability of data from our department's computer by tape input. Data could possibly be in disk, card, or tape form.

We had two requirements for data retrieval and manipulation. These were the ability to store and to correct data files. This required at the least tape retrieval, but better yet would be disk storage of data sets during the correction process. Disk storage generally allows for the rapid search of a file and for line-by-line correction. This type of manipulation is less cumbersome than tape searching and editing. However, we did require tape storage and retrieval for data sets not frequently used or data sets with large numbers of clients, such as a year's total of R-300 files.

In looking for data analysis packages, we wanted a system with a large number of statistical routines that could handle any of our various data sets--both the routine or special. Thus, we wanted a system which had any of the general analytical packages such as Statistical Package for

the Social Sciences (SPSS), Bio-medical Data Package (BMDF), or Statistical Analysis System (SAS).

All of these standard packages provide for basic descriptive statistics such as means, standard deviations, frequencies, variable transformations, and correlations. Beyond these basics are non-parametric statistics such as chi square, and multivariate statistics such as multiple regression, factor analysis, reliability, analysis of variance, and multivariate analysis of variance.

Additionally, we were looking for a data analytic system which would allow us to input our programs via an on-line terminal. The advantage of this type of system comes in terms of immediacy of feed-back on whether a program has run or has "bombed out" with errors. Such error detection allows for immediate correction and resubmission of programs.

Once the program was run, we wanted rapid turn-around time in obtaining the output. Very often the next step in an analysis depends upon the conclusions drawn from the previous analytic step. None of these data analytic capabilities was available to use through our state computer system.

OUR SOLUTION

Fortunately, a solution presented itself through the use of the University of Michigan's computer facilities. Feasibility discussions were held with the Rehabilitation Research Institute at the university, which has analyzed the national data tapes of the R-300 for RSA. Since the Institute was already familiar with and using the university computer, a training program and trial utilization period with the computer was established through them.

Our training program consisted on ten one-day sessions spaced about two weeks apart. Spacing the training sessions was very useful since it allowed time for reading the numerous and voluminous computer manuals and allowed members of the staff to practice the elements of our lessons.

The sessions began with a basic introduction on how to work with the computer via a computer terminal. To start with, we learned how to sign on to the computer and to build either a data set or program files. Such files are maintained on the large disk system utilized by the computer center.

Our next step was to learn how to correct errors within a data set or a program. This is accomplished by using the routine on the computer called "editor." The editor allows the terminal operator to enter a specified line of a file and change any character or number which is in error. The editor has the added advantage of being able to search an entire program or data set and alter a character or numeric string which is placed throughout the file. This is a great advantage if one wishes

to change a data element such as an R-300 missing data code of "+" to, say, "-9." If three hundred of the plus-pluses (++) occur, one command can change them all to a more acceptable code (-9).

After we learned to manage our own files, we then began to explore the statistical packages available on the computer. These were SPSS, OSIRIS, and MIDAS. SPSS, as stated earlier, stands for the Statistical Package for Social Science which is produced by Northwestern University. This series of statistical routines can be found on a large number of university computers and at the West Virginia Rehabilitation Research and Training Institute.

The other computer packages are developed and maintained at the University of Michigan. OSIRIS stands for Organized Set of Integrated Routines for Investigation in Statistics produced by the University of Michigan's Institute for Social Research. The other package, MIDAS, stands for the Michigan Interactive Data Analysis System produced by the university's statistical research laboratory.

All three of these systems have their special advantages. For example, the correlation matrix generated by an SPSS run gives the probability level below each correlation in the matrix. A factor analysis from OSIRIS calculates and prints the percentage of variance contributed by each factor. MIDAS offers a cluster program which easily clusters variables or clusters subjects, depending upon your interests.

As can be seen by these examples, as the researcher becomes familiar with a number of statistical packages, he/she may choose the specific one which best suits the data and the analysis to be performed. It might be added that coming by this experience can only be gained by using a number of packages, having funds which allow for exploration of your data, and, above all, a willingness to learn and experiment with a number of systems. The author is fortunate in this respect since he has been able to utilize three different university computer systems. The best advice is, if at all possible, not to restrict yourself to one analysis package or to one computer if it doesn't allow multiple analysis alternatives.

THE SPECIFICS: DATA ENTRY

In order to work on the university computer which is seventy miles from us, we leased a hard copy computer terminal and telephone data transmission modum. This type of computer terminal prints everything you type, as well as all computer responses on paper in the same manner as any typewriter. We chose this terminal over a cathode-ray (T.V.) display since the printed copy allows us to view our data sets, programs, and small outputs away from the computer.

With the aid of our graduate assistant and secretary, we planned to enter most of the data from our specialized studies ourselves. After some experience, we found that a data set with four hundred subjects and

two data cards per subject generally takes about fourteen hours to enter at a computer cost of approximately fifteen dollars.

The data entry time and cost do not sound very taxing until you try to enter and work on a number of data sets--say seven or ten. Soon data entry becomes a very laborious task, taking up not only terminal time but the valuable time of the staff. The additional staff cost usually runs between seven to ten dollars per hour. At the average of fourteen hours for data entry, the cost in staff time can be as high as one hundred to one hundred forty dollars for each set entered.

At these rates, an alternative for data entry was needed. This meant looking for a source which could prepare our data for us. Frequently universities, private data processing agencies, and departments within a state maintain keypunching services. Our computer service with the Department of Education was willing to keypunch data on to cards for us. So, in the future we will be utilizing this service as much as possible. These cards will be read into the computer using a link between the University of Michigan computer and a local computer at Michigan State University.

We have also asked our department computer center to prepare data tapes for us. For example, in our recent client follow-up survey, the computer center made a copy of the R-300 data on each client who was in our sample survey. Thus, we had a tape record of the R-300 files of the 690 individuals receiving the survey. The tape generated at our department was carried down to the university and placed on its system.

Having asked for a data tape like those submitted to RSA, we encountered several difficulties in working with it. The tape did not carry a standard IBM label but carried a volume number of six blanks at the beginning.

A tape label put at the beginning of a tape by a computer carries instructions as to how a tape is to be read by the computer. This label also contains a password which puts a lock on the tape to prevent unauthorized use. After much computer footwork, we circumvented the tape lock and label. After reading the data into a file, we also discovered that the RSA tape format does not carry an end-of-tape mark. However, after running several sets of programs which produced some very strange results, we found that the end of the R-300 data set is designated by having the last six eight-column rows filled with nines.

EDITING DATA

After building the data into a file it must be edited for errors or for unacceptable data codes. Although the R-300 data of our agency is anywhere from 95- to 97-percent error-free, the three or five percent of errors can cause a program to fail to run. One can simply delete cases which have erroneous codes. However, a five-percent error rate in our

follow-up sample of 690 cases with R-300 data would mean the loss of thirty-five cases. This might be tolerable, but one dislikes losing the entire data on a subject because of a single error in the data.

Generally, we have found that ten percent of our cases have a wild code which needs correcting. The computer routine of the editor is able to scan and alter wild codes rather quickly. The cost of editing data equals about forty percent of the job cost. On the average, this is about thirty to forty dollars.

PROGRAM RUNS

After the data are edited we first submit all the variables to a run on basic statistics which provides for means, standard deviations, and the range. An examination of the range often serves as a final check for wild codes. With this run we also request frequency distributions on any variables which will be subjected to transformations or recoded into dummy variables. An examination of these basic statistics allows us to determine what variables to include in further analysis, how to transform variables, and what type of dummy coding will yield the best picture of a variable's relationship to other variables. For example, in a recent analysis of our R-300 follow-up data, we recode twenty-three out of the original seventy-five variables to allow for the computation of correlational statistics.

Once the data is entered into a file, edited, and recoding accomplished, execution is rapid and inexpensive. Program runs account for about twenty-five to thirty percent of a project's costs; i.e., on the average of thirty dollars for small projects. For small data sets, thirty dollars devoted to statistical programs can generate just about every possible statistic one could need. But, as the data set grows, so does the cost.

One must remember that even on simple runs the computer has to read all the data for each case in order to calculate the statistics. So, to submit an R-300 tape for analysis with all the clients for a fiscal year (56,000 records), costs anywhere from forty to sixty dollars for a single cross-tabulation. The author has seen a singly six-by-four cross-tabulation run on 200,000 cases cost one hundred fifty dollars.

Therefore, we have decided to analyze small data sets and samples from the larger client population data base. The collection of statistics on the large client population will be left to our department computer which gives us basic statistics each year. Smaller samples of our data will be used when performing statistics such as factor analysis and multiple regression. An example of our procedures in this latter area follows in the next section.

AN EXAMPLE

As part of the present paper, I wish to review a small project which we analyzed. This serves as an example of the experience we have gained

in data analysis over the recent months. Another evaluator* and I were asked to assist a Michigan rehabilitation facility in analyzing some of their program data. The facility delivered services for the rehabilitation of 86 severely disabled persons. This was part of a special project partially funded by a Bureau grant. We were anxious to use this small data set as a test trial of our new computer capacity.

The Program Evaluation Unit was given a data entry document on each of the 86 clients. The data was a collection of demographic information on participants and some information on outcome after service. We were able to enter the data from the data sheets via the computer terminal. The aim of the analysis was to locate any client characteristics which related to program outcome; i.e., competitive employment.

A. Client Characteristics

The first step in the analysis was to examine the frequency distributions for client characteristics. The distributions for each data element are presented in Table 1. The basic picture presented by these data indicate clients who are in their early twenties, who have cerebral palsy, possess a high school education, have no work experience, and are living at home.

Client status at program termination showed 30 percent of the clients referred to vocational services, followed by 13 percent of the clients on a medical hold. Approximately 12 percent of the clients were placed in competitive employment.

B. Factor Analysis

In order to place the variables into a factor analysis, the basic frequency distribution of the nineteen variables was examined. Eight variables were transformed into dummy variables. Additionally, seven variables of an interval nature were recoded into class intervals. This latter transformation allowed for a more appropriate representation of the scale and for the calculation of an accurate mean.

These transformations are of general interest since there is a great similarity between the way these variables were coded and the type of codes found on an R-300 data set. Many of these transformations need to be carried out on the R-300 before any analysis can take place. Table 1 presents a list of the original codes and their transformations.

*Data for this project were collected and analyzed by Geraldine Hansen, Ph.D., and the present author.

TABLE 1

CHARACTERISTICS OF ALIOS PROJECT PARTICIPANT

	Former Code	Unadjusted No.	Unadjusted %	Transformation No.	Transformation %
Client Project Year					
1st Project Year	1	24	27.9	No transformation was necessary	
2nd Project Year	2	20	23.3		
3rd Project Year	3	31	36.0		
4th Project Year	4	11	12.8		
		86	100.0		
Sex					
Female	0	36	41.9	No transformation was necessary	
Male	1	50	58.1		
		86	100.0		
Age Group				New Code	Changed to mid-point of age interval
18-20	0	20	23.3	19	
21-23	1	15	17.4	22	
24-26	2	12	14.0	25	
27-29	3	14	16.3	28	
30-32	4	9	10.5	31	
33-35	5	6	7.0	34	
36-38	6	1	1.2	36	
39-41	7	9	10.5	41	
42 or more		86	100.0		
Major Diagnosis				Summary Code	Trans. -- No. 88
Cerebral Palsy, Spastic	0	48	55.8	Cerebral Palsy	58 67.4
Cerebral Palsy, Athetoid	1	10	11.6	Brain Injury	12 14.0
Traumatic Head Injury	2	12	14.0	Developmental Dis.	7 8.1
Spinal Cord Injury	3	2	2.3	Other	9 10.5
Orthopedic	4	3	3.5		86 100.0
Degenerative Disorder	5	4	4.7		
Other Developmental Disability	6	7	8.1		
		86	100.0		

(cont.)

TABLE 1 (cont.)

	Foster Code	Unadjusted No.	%	Dummy Code	Transformation No.	%
Age at Onset of Disability						
Prenatal, Perinatal, Postnatal	0	66	76.7			
1-10	1	3	3.5	At Birth	0	66
11-20	2	9	10.5	After Birth	1	76.7
21-30	3	4	4.7			20
31-40	4	1	1.2			23.3
Over 40	5	2	2.3			86
No Information	6	1	1.2			100.0
		86	100.0			
Amputation						
Independent	0	44	51.2			
Cane	1	11	12.8	Walking	1	0
Wheelchair	2	27	31.4	Cane/Walking Aid	0	1
Motorized Aid	3	4	4.7	Wheelchair	0	0
		86	100.0			44
						51.2
Education						
Above 12	0	10	11.6			
12	1	10	11.6	Regular Education	1	29
11-10	2	5	5.8	Special Education	0	51
9-7	3	4	4.7			86
6-4	4	0	0.0			
Below 4	5	0	0.0			
12, Sp. Ed.	6	31	36.0			
11-8, Sp. Ed.	7	15	17.4			
7-1, Sp. Ed.	8	5	5.8			
No Information	9	6	7.0			
		86	100.0			
IQ						
Above 110	0	3	3.5			
85-110	1	26	30.2			
69-84	2	31	36.0			
51-68	3	8	9.3			
21-35	4	1	1.2			
0-20	5	1	1.2			
No Information	6	16	18.6			
		86	100.0			

This variable was omitted from the Analysis since the intervals of IQ reported were so uneven

(cont.)

TABLE 1 (cont.)

	Former Code	Unadjusted No.	Unadjusted %	Reading (Grade Level was placed at the mid-point of the grade intervals)	New Code	Transformation No.
Reading						
Above 12.0	0	8	9.3		12.50	
9.0-12.0	1	5	5.8		10.50	
6.5-8.9	2	12	14.0		7.75	
5.0-6.4	3	15	17.4		5.75	
3.0-4.9	4	18	20.9		4.00	
1.0-2.9	5	20	23.3		2.00	
Below 1.0	6	2	2.3		--	
No Information	7	6	7.0		--	
Math						
Above 12.0	0	0	0.0	Same as above		
9.0-12.0	1	1	1.2			
6.5-8.9	2	8	9.3			
5.0-6.4	3	21	24.4			
3.0-4.9	4	28	32.6			
1.0-2.9	5	18	20.9			
Below 1.0	6	7	8.1			
No Information	7	86	100.0			
Work History						
No Work History	1	45	52.3	No	0	52
Volunteer	0	7	8.1	Yes	1	34
Clerical	2	2	2.3			86
Domestic	3	5	5.8			60.4
Unskilled	4	25	29.1			39.6
Skilled	5	2	2.3			100.0
No Information	6	0	0.0			
		86	100.0			
Days in Program						
80 or more	0	16	18.6	Days were placed at the mid-point of the interval	New Code	
70-79	1	1	1.2		85	
60-69	2	8	9.3		75	
50-59	3	12	14.0		65	
40-49	4	17	19.8		55	
30-39	5	11	12.8		45	
20-29	6	12	14.0		35	
10-19	7	8	9.3		25	
Below 10	8	1	1.2		15	
		86	100.0		5	

(cont.)

TABLE 1 (cont.)

	Former Code	Unadjusted No.	%	Survey Code	Transformation No.	%
Transportation						
Own Car	0	11	12.8			
Family	1	16	18.6	Car		1.0
Public Transportation	2	25	29.1	Family		0.0
Private (non-hand.)	3	2	2.3	Bus		0.1
Private (hand.)	4	31	36.0			
No Information	-	1	1.2			
		86	100.0			
Housing						
Independent		12	14.0	Independent Living		1.7
Family		5	5.8	Lives in Family		0.1
Supportive Unit		60	69.8	Institution		6.0
Nursing Home		2	2.3			9.0
Institution		7	8.1			10.4
		0	0.0			
		86	100.0			
Work Samples Completed						
10 or more		57	66.3	Omitted		
7 - 9		11	12.8	From the analysis		
4 - 6		5	5.8			
1 - 3		5	5.8			
Did not Complete		1	1.2			
Not Administered		7	8.1			
		86	100.0			
Work Sample Passed						
10 or more		7	8.1	Recorded to the mid-point of the interval		
7 - 9		1	1.2			
4 - 6		2	2.3			
1 - 3		6	7.0			
Did Not Pass		20	23.3			
Not Administered		43	50.0			
		7	8.1			
		86	100.0			

(cont.)

TABLE 1 (cont.)

	Former Code	Unadjusted No.	New Code	Transformation No.
Training Unit (Highest Productivity)				
75-100%		17	92.5	
70-84%		3	77.0	
50-69%		8	59.5	
30-49%		14	39.5	
10-29%		4	22.0	
8-14%		3	11.0	
Below 8%		45	4.0	
Not in Training		37		
Training Unit (Lowest Productivity)				
75-100%		0	92.5	
70-84%		0	77.0	
50-69%		2	59.5	
30-49%		3	39.5	
15-29%		18	22.0	
8-14%		8	11.0	
Below 8%		17	4.0	
Below 8%		36		
		37		
Work Status at Termination				
Competitive		10	10.0	10
Work Activity		9	10.0	9
Referred to Work Activity		11	0.0	24
Referred to Placement Department		13	0.0	25
Medical Hold		0	0.0	18
Hold, Other		6	0.0	85
Referred to Vocational Services		25	29.1	29.1
Referred to Academic Services		11	12.9	20.9
Referred to Other Services		1	1.2	1.2
		85	100.0	100.0

(Conclusion of TABLE 1)

Now that all variables were in dummy or interval form, they could be placed in a factor analysis. The analysis utilized was a principal factor solution with communalities placed in the diagonals of the correlation matrix. These factors were then rotated using the varimax method. The statistical package used was the University of Michigan OSIRIS IV. The solution generated ten factors of which the first five factors were interpretable. These factors are presented in Table 2.

An inspection of Table 2 shows that only a few variables define each factor. Factors I and IV show that having a work history is related to one's ability to be mobile. The other factor of interest is the last factor, Factor V. Here we find that placement in competitive employment is related to length of stay in the program. Since only these two items load on this factor, no real interpretation can be given about the causal direction of this relationship. That is, we cannot tell if successful outcome is "caused" by staying in the program for a longer time or if the ability to obtain a job helps one to also come to the program.

C. Multiple Regression

In an attempt to better understand the relationship among the variables and the goal of the program (i.e., employment), a multiple regression was performed. The variables were placed in this analysis using the outcome, competitive employment, as the dependent variable. The results of this analysis are presented in Table 3.

In this analysis three variables relate positively to competitive employment. These were number of days in the program, drives own car, and able to take a bus. As in the factor analysis mobility was positively related to work. So, mobility was important in work history and outcome. As in the factor analysis length in the program was also related to outcome. When other variables are controlled, the program contributes 12 percent of unique variance to outcome. Thus, we can feel more confident that the program has a positive contribution to outcome. However, we are still unsure as to what this contribution is.

Summarizing, from our factor analysis and multiple regression, we can see that the length of stay in the rehabilitation program is associated with outcome. The only client characteristic related to employment is mobility. The mobility of the client is related to both pre- and post-service employment. Mobility can be separated from the effect of the program, since the partial correlation with mobility controlled still leads to a relationship between outcome and length in the program.

TABLE 2

FACTOR ANALYSIS OF AIDS PROJECT

	Factor Loading	Percent Variance Accounted for	Cumulative Percent Variance
<hr/>			
Factor 1			
Walk	.83480	15.9	15.9
Bus	.76343		
Work History	.57312		
<hr/>			
Factor 2			
Regular Education	.84981	12.1	28.0
Onset of Disability (after birth)	.67947		
<hr/>			
Factor 3			
Age (older)	.67947	9.7	37.8
Independent Living Situation	.75796		
<hr/>			
Factor 4			
Car	.81023	8.0	45.8
Work Samples Passed	.80029		
Math Level	.54138		
Work History	.43721		
<hr/>			
Factor 5			
Days in Program	.70977	6.7	52.6
Competitive Employment	.78821		
<hr/>			

TABLE 3

REGRESSION ANALYSIS TO COMPETITIVE EMPLOYMENT

Variable	Partial R	R Squared	T Ratio
1. The greater number of days in the program	.380	.1270	3.7307
2. Drives own car	.332	.0932	3.1959
3. Able to take a bus	.327	.0901	3.1418
F-Ratio for the regression	9.203		
Multiple correlation coefficient	.5019		
Explained variance	.2519		

Thus, the analysis of this special project not only demonstrated the value of the rehabilitation program but also demonstrated the value of our data analytic capacity. The expanded capacity with the University of Michigan computer allowed us to enter and retain evaluation data. We were then able to transform variables, run various analytical procedures, and discover relationships not known to us.

CONCLUSION

The Michigan Program Evaluation Unit has two alternatives for data analysis. The first is the production of routine program information from the Michigan Department of Education's departmental computer. The department's computer is used to generate reports which summarize data on clients and counselors on a quarterly and annual basis. These reports provide us with global parameters on the client population with breakdowns by sex, rehabilitation outcome, and diagnostic group.

Recently the unit has developed a second data analytic capacity with the University of Michigan's Computer System. This system allows for the analysis of special projects. Special projects may be of the type in which data collected independently of the Bureau's Management Information System are analyzed. The example analysis presented in this paper is of this type. Special projects may also include sampling case records from the Management Information System and placing these in an extended analysis.

The combination of these two analytic capabilities has placed the Program Evaluation Unit in a good position to offer the Bureau's management better evaluation and consultation.

COMPUTER ACQUISITION AND OPERATION

Mississippi Vocational Rehabilitation for the Blind

Background

The Rehabilitation Act of 1973 and subsequent amendments thereto have placed greater demands on rehabilitation agencies in terms of service provision to clients and agency accountability for such services. Thus, like other rehabilitation agencies, Mississippi Vocational Rehabilitation for the Blind (MVRB) experienced a sharp increase in the amount of raw data generated, routine reporting requirements and special reporting requirements. MVRB soon realized that its manual record-keeping system could not keep pace with the increasing data output and began searching for an alternative method which, because of cutbacks in personnel and budgetary constraints, had to be inexpensive and capable of simple and immediate implementation. The answer was found in MVRB's sister agency, Vocational Rehabilitation-State Department of Education/Mississippi, which had been developing a system of computerized information retrieval since 1968. In the fall of 1973, the director of both agencies met and an agreement was reached by which MVRB would use the general agency's Client Information System, but without modifications, in exchange for the processing costs. In mid-1974, MVRB began collecting statistical data for FY-75 caseload reporting. In 1977, the agreement was expanded to include MVRB's use of the general agency's Case Service Expenditure System which permitted retrieval of limited financial data. Under the conditions of the original expanded agreement, MVRB's involvement was strictly a hands-off role. Although this agreement allowed MVRB to meet its immediate needs, MVRB management was keenly aware that the time lapses in processing MVRB data (ten to twenty-eight days from collection of data to its return to MVRB district offices in a usable form) greatly negated the three (3) hallmarks of a sound information system: responsiveness, timeliness, accuracy.

Assessment of Problem Areas

With the award of a contract to establish a Model Evaluation Unit (MEU), the Director of MVRB requested that the MEU analyze MVRB's data processing needs and explore possibilities for actualizing an internal data processing system. The MEU's Systems Analyst spearheaded the study of MVRB's existing Management Information System. Assistance was provided by the MVRB staff, the consultative services of Gehl and Associates (Atlanta, GA), the consultative and technical services of RSA-Region IV Federal Office (Atlanta, GA) and the research and analytical services of the MEU staff. The study team identified the single most glaring deficiency to be the lack of access to available data in a form capable of supporting the decision-making process necessary for managerial efficiency and effectiveness. While instances of non-existent information as a deficiency were also identified, the overriding concern was the MVRB had no acceptable method of easily retrieving usable data.

The study team set the following criteria by which to judge alternative solutions to MVRB's data processing problems: (1) flexibility of the alternative proposed; (2) accuracy of information via the alternative proposed; (3) cost of alternative implementation and maintenance; (4) method responsiveness and (5) adaptability to change. Change as used here refers to possible future alterations in routine and special reporting mandates as the result of national and/or state programs and policies. Among the possible solutions proposed and considered were: (a) increase the existing staff to expand manual operation; (b) use microprocessor based flexible disk units to store some data; (c) use off-site batch processing; (d) use on-site batch processing; (e) use on-site data entry with off-site batch processing; and (f) use on-site data entry and batch processing.

During the evaluation of these proposed alternatives, vendors of data processing equipment and systems specialists were contacted to secure their expert input. These vendors included IBM, Datapoint, IV-Phase, Telex, and Texas Instruments. Additional evaluative input was provided by the Central Data Processing Authority (CDPA)-State of Mississippi (Jackson, MS), Gehl and Associates (Atlanta, GA), Mockbee, Edwards and Associates (Jackson, MS), South Central Bell Telephone Company (Jackson, MS), and managers of state agency electronic data processing units. Ultimately, the study team reached the consensus that MVRB's needs in data processing could best be served through acquisition of its own data processing equipment and the actualization of a staff capable of systems development exclusively responsive to MVRB's needs.

Equipment Acquisition Procedures

The first step in acquiring data processing equipment for MVRB was for the MEU's systems analyst to develop a Proposal for Data Processing System for approval by the MVRB Director and subsequent submission for approval to the CDPA-Mississippi and RSA-Washington, D.C. The proposal was prepared in accord with the CDPA's format as it is the agency in Mississippi which has authority statewide to receive, review, approve or reject all requests for data processing systems. The proposal prepared by the MEU's systems analyst included, briefly, the following:

I. STATEMENT OF PURPOSE

Stated findings of study team and proposed remedial action vis acquisition of a data processing system for MVRB.

II. BACKGROUND

Explained what factors made it expedient that MVRB secure and assume management of a data processing system, how MVRB was currently handling its data processing needs, and justification to support MVRB's request.

III. SUMMARY OF NEED APPLICATIONS

The proposal noted that at a minimum seven systems were needed:

A. Case Recording and Expenditure System with the minimum capabilities of:

1. Immediate data entry, validation and retrieval at the state office level;
2. Prompt payment for vendor services as an automatic by-product of the system;
3. Provision of caseload and budget reports for field and district staff on a current basis;
4. Responsiveness to the changing needs of management and of the Federal reporting requirements;
5. Provision for security and confidential information;
6. Supporting fiscal accounting by maintaining records in an auditable manner;
7. Supplying data needs for program evaluation, research and planning; and
8. Alerting management at several levels of any condition which is unusual or in need of immediate attention.

B. Payroll Information and Accounting System encompassing the following requirements:

1. Data entry, editing, and retrieval by personnel staff as the need occurs;
2. Automatic generation of all monthly payroll payments and required registers and reports.
3. Automatic distribution of accounting information for state and Federal budgets;
4. Generation of all quarterly and annual wage statements;
5. Allocation of staff and fringe benefit costs by program, area, or district for cost-benefit analysis; and
6. Responsiveness to special reporting requests.

C. Administrative Accounting and Payments System designed to address:

1. Ease of data entry, edit, and retrieval by accounting staff;
2. Generation of vendor payments with required registers and distribution reports;
3. Allocation of expenditures by program, area or district for cost-benefit analysis;
4. Generation of projected costs for the budgeting process; and
5. Line item comparison of budget versus actual costs incurred.

D. Equipment Inventory Tracking System characterized by:

1. Ease of data entry, edit and retrieval by accounting staff;
2. Generation of budget information regarding new and replacement equipment;
3. Allocation of equipment costs by program, area or district for cost-benefit analysis; and
4. Detail information for conducting audits of equipment statewide.

E. Business Enterprise Program (BEP) Information System capable of:

1. Easy data entry, edit and retrieval by BEP staff;
2. Tracking and reporting all financial transactions by stand location on a current basis;
3. Providing for automatic generation of all required payroll statements and reports by location;
4. Generating current Profit and Loss Statements by location;
5. Providing immediate access to equipment inventory and repair history by location, description or ID number;
6. Providing for the auditing of stock goods at each location by producing perpetual inventory reports; and
7. Enhancing managerial decisions by providing current and accurate information for use at the statewide, area and local levels

F. Management Information and Evaluation System designed to include the following capabilities:

1. Provide state, area, and district caseload profiles for the purpose of allocating agency resources;
2. Provide statistical analysis of case characteristics in order to evaluate and project program effectiveness;
3. Provide data necessary to assign direct and indirect agency costs on an individual case basis for the purpose of evaluating and projecting program efficiency;
4. Provide data necessary to ascertain normal bounds for duration of service provision and to indicate those instances which fall outside these parameters in order to assure program timeliness;
5. Provide data necessary to summarize the financial standing of each MVRB component on a current basis, thereby preventing the under-utilization of Federal allocations in the provision of services to clients;
6. Provide for the project of line-item budget needs based on the most current actual and projected cost figures;

7. Provide storage and retrieval of data thus permitting the agency to respond quickly to requests for information from Federal, state, private and public sources; and
8. Reduce the volume of clerical responsibilities and release valuable manpower for higher levels of professional action.

IV. ALTERNATIVES CONSIDERED

Alternatives previously noted in this article were discussed in depth.

V. LONG RANGE PLAN

The CDPA-Mississippi required that along with a proposal for data processing, the agency submit a five-year plan which addressed the projected thrust of the agency in terms of data processing. The plan submitted included coverage of such areas as projected upgrades, applications, files, equipment, and the like.

VI. ALTERNATIVE SELECTED

Explained how the particular system configuration was selected. This section of the proposal cited the criteria used by the study team, the utilization of existing agency resources, the lack of increase in existing agency budgeted costs, the availability of limited Federal funds, and the fact that no additional agency staff would be immediately required as factors impacting the selection of a system configuration.

VII. SYSTEM SPECIFICATIONS

The MVRB proposal listed (1) remote job entry, (2) data entry (3) CICS, and (4) local processing as specifications, addressing each separately so that bids from vendors could be compared equally. (Advertising for bids on data processing equipment is handled by the CDPA-Mississippi which, in turn, advises the agency of the bidding outcome.)

VIII. SOURCE OF FUNDS

Contained a statement to the effect that funds for the acquisition of the proposed system would come from Federal and state appropriations already budgeted, with no more than 15 percent of the system's cost being covered by state-appropriated funds.

It should be noted here that the original proposal submitted to the CDPA had to be revised and re-submitted in accordance with the CDPA's interpretation of the needs of MVRB as described in the original proposal.

The System in Operation

The culmination of more than a year's work came in January, 1980, when a stand-alone mini-computer was installed in the MVRB state office. The acquisition of this equipment signalled, in MVRB, the advent of a new methodology in the agency's design for providing rehabilitation services to Mississippi's blind and visually impaired population.

As of July, 1980, MVRB's data processing system is under active development. Since all MVRB functions revolve around the activities of field or client service personnel and their interaction with clients, major efforts have been directed toward developing an on-line update and retrieval system of client statistical and financial data. When completed, this system will provide timely data for caseload management at all levels of state agency activities. Considerable effort has also been devoted to pre-planning systems and brainstorming with MVRB staff in an effort to identify major concerns and anticipate data requirements at each level.

Beyond refining statistical and financial capabilities, there are plans to develop a flagging system to enhance efficiency in agency operations. Such a flagging system would include timely client movement, timely client contact, Annual Review of IWRP, Review of Ineligibility Decision, and Review of Extended Employment in Facilities, to name but a few of the almost limitless possibilities.

NOTE: This prescriptive article necessarily abbreviates certain steps in the acquisition and beginning operation of Mississippi Vocational Rehabilitation for the Blind's data processing system. Requests for specific details or answers to questions may be addressed to the Mississippi MEU at P. O. Box 4872, Jackson, MS 39216.

WORD PROCESSING APPLICATIONS OF
THE OREGON MODEL EVALUATION UNIT

Lynn Della, Laurilee Hatcher and Ross T. Moran
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When the Oregon Vocational Rehabilitation Division (VRD) first contemplated involvement with the model evaluation unit/management information support (MEU/MIS) project, we were concerned about the anticipated increase in secretarial/clerical paperwork which would result from contract requirements. Because of this concern and our desire to build program evaluation/policy support capacity, we requested the leasing of a word processing (WP) system in our contract proposal.

After a comprehensive needs assessment of potential system users and a comparative review of the available technologies, we obtained a CPT 8000 system. The system was installed in October, 1979.

We have developed applications for the word processing system to handle work derived directly from the MEU/MIS project, work associated with the unit activities distinct from the MEU/MIS project, and communications applications. This paper discusses each of our applications of the word process which have been implemented and some of the future applications which we anticipate.

Merging lists of names with letters/envelopes for mail surveys. Considerable use of the WP capability to sort and merge has been made by the MEU/MIS in preparing lists, deletions and labels for mailed surveys. This was especially useful in meeting the requirements of pretesting the proposed VR evaluation standards which involved production of personalized follow-up surveys and reminders which were sent to clients.

Issue Tracking System. An outgrowth of the MEU/MIS contract was the identification of agency policy and procedure issues of which the Administrator wished to be aware. After the issues were defined and a reporting format designed, the tracking system was input to the WP system. Updated monthly by additions, modifications, and deletions, the tracking process is ideally suited to the capabilities of WP. An article in an earlier issue of the MSOA describes the issue tracking system in greater detail.

Service Request Log. The agency has long followed the practice of documenting requests for management information. For many years these requests were maintained and logged in a handwritten system. Acquisition of the WP offered the opportunity for electronic logging. The WP log was established beginning with outstanding requests. As new requests were produced, new lines were added to the log. It is possible to produce lists of requests by numerical order, requester, data requested, date wanted, priority status, person assigned to track, or date completed.

MEU/MIS Project Work Plan. Soon after the initial contract award, the MEU/MIS staff determined the necessity of an easily revised "project work plan." This was directly related to the contract requirement to develop an "operation tracking system." A format was developed and implemented. This first tracking system was found by the unit to be less useful than hoped, and was significantly revised near the end of the second project year. The new format is briefer and much more easily updated and copied. Using the sort/merge capability of the machine, it is also now possible to produce separate lists of only those tasks assigned to specific individuals.

Structuring and completing both regular and special statistical reports. The primary WP features employed in statistical report generation are the vertical line capability and the automatic decimal alignment capabilities of the system's IO-key pad. The vertical line allows creation of boxes, graphs, charts, etc. The automatic decimal alignment provides for speedy input of numbers of varying lengths by maintaining the integrity of the "ones" column or, where applicable, a decimal point. The time-saving element of these features is well appreciated when preparing a report such as the agency's budget document, where time is of the essence.

Math Pak. Also a new acquisition, the recently developed CPT "Math Pak" software allows the WP operator to perform simple and complex mathematical functions. Many calculations which can be completed on a standard calculator may be achieved using the WP keyboard, from simple arithmetic to use of memory and square roots. OVRD has just begun identifying and developing applications for this feature above and beyond simple verification of statistical reports.

BASIC. The CPT 8000 also accepts software which converts it from a word processor to a mini computer, programmable in the computer language BASIC. We have recently acquired this capability. We expect that it will fill the technology gap between the capabilities of our statistical hand calculator and the large computer we share with our umbrella agency.

Optical Character Recognition (OCR). Having trained seven staff members as WP operators, it was obvious that not all could use the system simultaneously. Consultation with the vendor representatives introduced the concept of optical character recognition (OCR) to the agency. OCR allows materials typed on a regular typewriter to be machine read. Arrangements were made for OVRD staff to utilize the OCR reader at another State agency during designated hours. OCR typing elements were purchased for agency typewriters and the input capability has multiplied. By working with the trained operators, secretarial staff untrained in WP have become able to produce high quality originals and revisions in a timely manner. At the current time, however, due to cost, OVRD has no plans to acquire its own OCR reader.

Diskette storage of various administrative policy and procedure manuals so they may be easily updated. At the time the WP proposal was

written it was anticipated that the agency's 1,300 page administrative manual would be entered into the WP system. Subsequently, the decision was made to revise the manual in its entirety. Drafts for the revised manual are now typed for OCR input.

Administrative Reviews. The agency's Administrative Review staff evaluates the quality of field case work. They produce reports following each review. These reports are about 20 pages long and are substantially revised at least once. Agency secretarial staff have been able to make more efficient use of their time by using the WP for these reports.

Client Equipment Repossession List. The client equipment repossession list, which is sent to field offices on a monthly basis, is similar to the Issue Tracking System in its applicability to WP. It identifies equipment purchased by the agency to facilitate clients' rehabilitation. When a client's case is closed as other than "rehabilitated," this equipment is repossessed by the agency and becomes available for transfer from one field office to another. This reduces the purchase of duplicate equipment. WP use for this list began in June 1980, and appears to be functioning smoothly.

Creation of a document retrieval system for the agency library. We originally planned to use the WP system as a form of automated "card catalogue" for the documents in the agency's small library of monographs, reports, books, and other literature. Some form of "coordinate indexing" system of documentation was planned, which would be well-suited to the capabilities of the word processor. This plan was superseded by a scheme whereby we transferred the bulk of our documents to the state library. It was also thought that with the communications capability of the system we could tie into a national or regional computerized bibliographic system to "expand" our access to relevant documents. Several contracts have been made regarding this experimental work which has demonstrated the feasibility of this and we anticipate a more extensive implementation of this concept in the third project year.

Acoustical Coupler. Peripheral to the basic WP system, the acoustical coupler is a new acquisition, and not yet much used. It allows "communication" between the OVRD WP and any other WP system or computer which also has a coupler and compatible "protocol" (selectronic send/receive rates, language, etc.). Currently, the MEU/MIS has established a communications relationship with the WVRTC computer. This paper was transmitted from Oregon to WVRTC via the coupler for output through WVRTC's phototypesetter (also connected to the computer there). We will also use this feature to access the national bibliographic systems discussed above.

Organizational Charts. The agency is required by the State to maintain up-to-date organizational charts. Updating these by hand or traditional typewriter is time-consuming and often leads to xeroxes of xeroxes of xeroxes. Early in 1980 the agency's charts were put into the WP system. The system's capability to produce high quality originals was very well received.

As the agency reorganized in June 1980, the system's capability in the area of organizational charts proved to be a real asset, since as many as five complex reorganization drafts were produced before the final was accepted. It was possible to complete, copy and deliver a revision in about a half-hour.

Unit correspondence. Initially, the system was employed for routine letters and memorandums. However, these types of documents are not often subject to revision. As the variety of applications increased, it became apparent that using the system for routine correspondence was not efficient.

Trained operators from other agency units have utilized the system for merging standard correspondence text with variable names and addresses for applications such as information memorandums and meeting notices.

One agency product proposed for WP is the Personnel Unit's "Staffing Allocation," a somewhat complex listing of agency positions, employees, EEOC codes, classification, position number, etc. This list is about 12 pages in length and must be revised monthly. Its format is ideally suited to the WP application.

To make more efficient use of the WP, serious consideration is being given to implementing a double shift. With more extensive use of the CPT 8000 through initiation of bibliographic searches and its use as a mini-computer, the possibility of multi-shift operation of the machine has almost become a certainty.

We have found many applications for the word processor in enhancing the capabilities of the MEU. While our early experience has centered on its use as a text editor, we are rapidly expanding its utilization so that it will truly function as an information processor capable of supporting and enhancing the program evaluation and management information functions of the MEU/MIS unit.

EVALUATION SECTION LIBRARY

Leah Kuhns, Administrative Assistant
Pennsylvania Bureau of Vocational Rehabilitation

The Pennsylvania Bureau of Vocational Rehabilitation (BVR) established its Evaluation Section Library as the result of its Federal contract to develop "A Comprehensive State VR Program and Policy System Through a Model Evaluation/Management Information Support Unit." This contract mandates that a library dealing with program evaluation be established.

In the beginning all that was envisioned by Pennsylvania's Model Evaluation Unit (MEU) was a small library dealing solely with evaluation subject matter. But as the work progressed it became apparent that there was a need for a more extensive library which would serve the entire Bureau, and the library that was established, while known as the Evaluation Section Library, is, in fact, a BVR library. In addition to its program evaluation (PE) holdings it contains material in many areas of vocational rehabilitation (VR), including new rehabilitation trends, current legislation, specific disabilities, assistive devices, material for civic groups, etc. This library is now housed in the Central Office of the Pennsylvania BVR and serves BVR's 15 District Offices, four Regional Offices, the Hiram G. Andrews Center, (a 500 client rehabilitation center operated by the BVR) and three Disability Determination Offices.

The creation and subsequent development of the Library was not an easy task. It required careful planning, much research and a lot of hard work on the part of the staff of the BVR Evaluation Section. But we feel the end result was well worth the effort, and we would like to share with you the process by which the Library was established and to describe its operation now.

Since this was a totally new undertaking in an unknown area, there was an obvious need for expert advice and assistance. This was sought from many and varied sources. One of the more evident needs was for the expertise of professionals in established library systems. The Pennsylvania State Library, located in Harrisburg, was solicited for technical assistance on the establishment, maintenance and continuing development of a library. In addition, its staff provided information on the various activities and resources within the State Library which would enable us to supply the BVR field offices with pertinent material to meet their needs. For example, they provided us with a list of all periodicals received by the Pennsylvania State Library and placed us on their mailing list to receive notification of all new acquisitions. In addition, the Evaluation Section Technical Assistance Center (TAC)--the official name of the Evaluation Section Library--has been listed in the Pennsylvania State Library's publication "Directory of Libraries serving the Government of the Commonwealth of Pennsylvania." This directory shows the

number and types of information resources available to the various agencies, departments, commissions, and boards of the Commonwealth of Pennsylvania.

We had another very important resource in the library which is located at the Hiram G. Andrews Center in Johnstown, PA. The Center Library has a section of material available for use by Center clients and a separate section of reference materials for staff use. In addition, it is in the process of establishing a medical library for use of the Center staff. A two day visit to this Center produced valuable information as to cataloguing procedures, suggestions about periodicals and books to be acquired, publishers, other types of resources. We continue to receive assistance from this library when conducting research and have need of materials not contained in our TAC.

We also contacted and received much valuable assistance from many sources outside Pennsylvania. Massachusetts, Minnesota, Ohio, Oregon and Virginia all have state vocational rehabilitation agency libraries, the staffs of which shared their expertise with us. Two members visited the National Rehabilitation Information Center (NARIC) in Washington, D.C., to obtain its assistance in dissemination, utilization and library science techniques and to discuss the purpose of NARIC and how it serves rehabilitation professionals. Personal visits were also made to the President's Committee on Employment of the Handicapped, the Office of Handicapped Individuals, the Office of Civil Rights, and Project Share, all of which provided various types of information and assistance. (Project Share, located in Germantown, MD, is a free-of-charge, on-demand service which permits organizations and individuals to contact its clearinghouse by mail or telephone with requests for information on various topics. The responses to reference requests are customized, annotated bibliographies, generated primarily from the Project Share data base.) Two persons attended the first meeting of the Rehabilitation Information Round Table in Washington, D. C., an organization designed to promote the sharing and dissemination of rehabilitation information, and working relationships were established with ICD in New York and the Oklahoma State University Clearinghouse in Stillwater, OK. These agencies assist our library in locating material on subjects being researched. For instance, the TAC received a request from the field for a film to show persons who are being deinstitutionalized from a state mental hospital to let them know what VR is and how it can assist them. Several films were located at the Oklahoma State Clearinghouse which sent them to the TAC for review. As a result, two films are being purchased and will be made available to field personnel.

Another phase of the groundwork was contact with publishers, numerous rehabilitation-related organizations and other sources that have available VR and PE materials which could be acquired for inclusion in the library.

The actual creation of the library required many decisions in three principal areas--physical needs, acquisition of materials, and operations. Foremost among the physical needs was housing--a suitable location where

people would feel free to visit and browse was selected. Then it was necessary to order bookcases, book covers, magazine racks, a filing cabinet, and other needed equipment. Selection of material to be ordered was done by a three-person review team which carefully selected material on the basis of the audience we wished to serve. Among other things, a \$200 deposit account was established with NARIC to receive photo duplication of available documents as needed. (An unexpected but most welcome source of materials was and continues to be persons working in our agency having personal holdings which they donated to the Library.) In operations, a most important consideration was the choice of a cataloguing system. A lot of study went into its selection. Various cataloguing systems were researched, numerous thesauruses obtained, and the development of our own system considered. In the end, it was decided to adopt the classification designed in 1961 by the Oregon Division of Vocational Rehabilitation. This decision was based primarily on the fact that it was a proven system which had been adopted with success by various agencies which house rehabilitation literature. Providing detail and at the same time allowing for flexibility to meet individual needs, it has proven to be a very usable system in our library. Its classification system identifies nine major subject areas and these are subdivided to allow for the classification of publications which deal with various aspects of these major subjects. The major subject areas and numbers assigned are: 100 series--Rehabilitation; 200 series--Disabled and Handicapped Groups; 300 series--Impairments; 400 series--Rehabilitation, Cooperation and Integration; 500 series--Rehabilitation, Financing; 600 series--Social Problems; 700 series--Government; 800 series--Administration; and 900 series--Reference Works not Related to the Above Subjects.

When a publication is received for inclusion in the library, it is first classified and cataloged. For books, pamphlets, and miscellaneous material, two 3" x 5" cards are prepared: one by title and one by author. The publication is then reviewed and additional cards are prepared under subject headings. (The number of subject cards is determined by the number of main subjects covered in the particular publication.) The material is then placed on the shelves or in the vertical file, which is a file cabinet containing magazine articles, pamphlets, and other material which it is not practical to store on bookshelves. Material so housed is identified in the card catalog with a "VF" under the classification number.

A separate card file was established for periodicals, of which we are presently receiving approximately 75. In order to maintain an accurate up-to-date record of each periodical received, a card is prepared for each periodical. As each new issue is received, it is recorded on the card and circulated among the Evaluation Section staff. Upon completion of circulation, the periodical is returned to the library where it is placed in a wood-grain plastic holder with other issues of the same periodical. All periodicals are located together in a section of the library which is easily accessible to anyone wishing to use them.

Since the main purpose of the Evaluation Section Library is to provide pertinent information to all Bureau of Vocational Rehabilitation personnel, a method for dissemination of material needed to be established. The tool selected to assist in the dissemination of material was the "Rehab Brief," a biweekly publication prepared by the Rehabilitation Research Institute of the University of Florida, located in Gainesville. Since all field personnel receive this publication, it was decided to include an insert with each "Rehab Brief" making its readers aware of Evaluation Section Library acquisitions. Each issue of the "Rehab Brief" deals with a specific subject of interest to rehabilitation personnel. Therefore, the basic format for the insert is a short one-paragraph synopsis of the subject discussed in that issue. This is followed by a listing of material which is available on this subject in the Evaluation Section Library. The remainder of the two page insert is used to offer to the field other material which might be of interest to them. The material includes articles on various subjects, free material they can order from clearing-houses and other agencies, and any other information we feel would be beneficial.

Since the main thrust of the insert is to obtain user involvement and the dissemination of material down to the counselor level, all personnel receiving this insert may call the Evaluation Section Library directly for information. This is an important facet of the Evaluation Section Library since it is a direct linkage with every level of BVR personnel. In addition, another important aspect of user involvement is obtaining feedback directly from the field. Field staff are encouraged to contact the Library with suggestions for improvement, recommendations for acquisitions they feel would be beneficial for inclusion in the Evaluation Section Library and any other areas they feel would assist us.

Technical assistance is an additional service which the Evaluation Section Library provides to persons requesting specific information. Thus far technical assistance has been provided on a wide range of subjects, a few of which are clothing adaptations for specific disabilities, specialized eating equipment, information on specific disabilities, accessibility design and functional limitation. It must be stressed that providing this type of assistance requires a considerable amount of time. To thoroughly research a request, all publications pertinent to this subject which are part of the Evaluation Section Library are reviewed for possible inclusion. In addition, if we do not have sufficient information, the request is researched through the Pennsylvania State Library, NARIC, Research and Training Centers, RRRIs, and any other source we have knowledge of where this material might be available.

Within the last several months, a loan service has been generated which makes available to the field various publications which can be loaned for a two-week period. Each issue of the "Rehab Brief Insert" lists new books available through the loan service. Since it is not unusual for more than one person to request each publication, a waiting

list has been established and books are loaned on a first-come basis. Accompanying each book is a memorandum stating this publication is being furnished on a loan basis and the due date for it to be returned.

Within the next year a separate listing of all periodicals and books within the Evaluation Section Library will be prepared for dissemination.

We have attempted to summarize for you how we in Pennsylvania established the Evaluation Section Library, and how it now operates. Should you begin a project such as this, we feel the major emphasis must be on taking steps which would encourage user involvement. This is extremely important in order to obtain maximum utilization.

There has been a great deal of satisfaction derived from the establishment of the Evaluation Section Library, especially when we see the interest generated from the field staff. However, we feel it is important to stress the amount of time and effort needed to produce these results. It is by no means a small undertaking. In addition to maintaining the actual day-to-day operation of the Evaluation Section Library, which includes ordering publications, cataloguing material, and all other aspects of library work, we received approximately 150 requests from the field staff during the first year of operation. The 150 requests included information offered in the "Rehab Brief Insert" and requests from district offices and central office for specific technical assistance. Examples of technical assistance included information for presentations to civic groups on affirmative action for the handicapped, job readiness programs for the deaf, current legislation, and specific information on disabilities and assistive devices. We do not wish to discourage you from such an undertaking, in fact we wish to do just the opposite--but we do want to make you aware of the effort involved.

We hope this information will assist you. If you have any questions, or want more information, please contact Leah Kuhns at 717-787-7312. The mailing address is Bureau of Vocational Rehabilitation, 1318 Labor and Industry Building, 7th and Forster Streets, Harrisburg, PA 17120.

PLANNING FOR AN INDEPENDENT LIVING PROGRAM IN VIRGINIA

Stanley E. Portny and Associates, Inc.

Title VII of the Rehabilitation, Comprehensive Services and Disabilities Amendments of 1978 (P.L. 95-602) authorizes several new program initiatives for the provision of comprehensive services for independent living which are designed to assist severely disabled individuals to function more independently within their homes, families and communities. As the state agency responsible for the coordination of programs and services to handicapped people in Virginia, the Department of Rehabilitative Services (DRS) is currently reviewing the existing activities designed to serve this target population and formulating integrated strategies for the design and implementation of an Independent Living Program.

To facilitate statewide planning for independent living, DRS has awarded a contract to Stanley E. Portny and Associates, Inc. (SEPA), to evaluate the current system for delivering comprehensive rehabilitation services for independent living and to develop recommendations for its expansion and improvement. Specific study objectives are:

- To describe and develop estimates of the target population of severely disabled individuals in Virginia;
- To estimate the need for comprehensive rehabilitation services for independent living in Virginia;
- To determine and describe resources available to assist in meeting this need;
- To describe and evaluate the current program and service delivery system for providing these services in Virginia; and
- To develop recommendations for planning, managing and evaluating an independent living rehabilitation program in Virginia.

This project was initiated in January 1980, and completion is expected in October 1980. The results of the study will be presented in a series of working papers and reports, the highlights of which are as follows:

CONCEPTUAL FRAMEWORK - A WORKING PAPER

Provides an introduction to the study background and approach; summarizes general concepts of independent living, including underlying principles and independent living terminology; reviews Federal requirements for independent living programs; and discusses the preliminary planning for independent living which has been initiated in Virginia.

Identifies and defines the different independent living services; identifies specific programs established under P.L. 95-602 which provide these services; identifies other state/Federal human service programs which provide services identical or similar to comprehensive services for independent living; analyzes the existing service delivery mechanisms and existing or potential service gaps.

FINANCIAL SUPPORT AND ASSISTANCE FOR INDEPENDENT LIVING SERVICES

Discusses different types of funding sources and mechanisms and the use of similar benefits; identifies different Federal and state resources available in Virginia; and presents detailed analyses of funding sources available for housing and residential services, transportation services, and attendant care.

ESTIMATES OF THE DISABLED POPULATION IN VIRGINIA

Discusses conceptual and methodological problems in estimating the severely disabled population; reviews ways in which population data may be used in planning; summarizes secondary data sources on the incidence and prevalence of disabling conditions in Virginia; and presents estimates of the disabled population in Virginia.

ESTIMATES OF THE NEED FOR COMPREHENSIVE REHABILITATION SERVICES FOR INDEPENDENT LIVING IN VIRGINIA

Identifies those independent living services considered to be of greatest importance in Virginia; presents estimates of the general need for these priority services; and prioritizes the populations to be provided these services in Virginia.

PLANNING RECOMMENDATIONS AND STRATEGIES FOR AN INDEPENDENT LIVING PROGRAM IN VIRGINIA

Identifies key independent living planning and implementation issues; reviews relevant study information; analyzes alternative planning options; and provides suggestions for additional studies to address identified information requirements.

STUDY FINAL REPORT

Provides a summary of the study and highlights of activities conducted.

As indicated, the Conceptual Framework was prepared to present historical and legislative perspectives of the intent behind the independent living movement, to provide a general orientation to the study and to establish a structure for the design and performance of subsequent study tasks. In the remainder of this article, highlights of the topics discussed and issues raised in the Framework are presented.

HIGHLIGHTS OF THE STUDY CONCEPTUAL FRAMEWORK

During the past three decades, several different concepts of independent living have emerged; and the influence of each is reflected in the provisions of title VII of P.L. 95-602. According to the traditional concept, aids to daily living would be provided and physical modifications to the environment would be made to assist severely physically handicapped people to attend to their personal care and basic survival needs. The principal objective of services provided in accordance with this "medical model" was to enable handicapped people to live in non-institutional settings.

At the start of the 1960's, the early vocational rehabilitation concept emerged, which viewed independent living rehabilitation services as vocational rehabilitation services which were provided to severely handicapped persons who did not have a vocational goal. In addition to recommending that the independent living rehabilitation program be administered separately from the title I program, these early proposals included:

- An expansion of the traditional concept to include both physically and mentally handicapped people;
- An expansion in the scope of independent living services to be provided; and
- An extension of the independent living goal from simply preventing institutional care to improving the lifestyle of severely handicapped individuals.

During the same time that efforts were being made to amend the Vocational Rehabilitation legislation in the 1960's, a concept of independent living was being developed by handicapped people and the societal changes needed for them to participate fully in community life. The consumer concept, which was promoted largely by physically handicapped persons, emphasized a total integrated service system which included not only vocational rehabilitation, but other needed services as well. Central to this concept, which was based upon a self-help framework, were the issues of consumer sovereignty, self reliance and the political and economic rights of disabled people.

The contemporary rehabilitation concept, as reflected in the provisions of title VII of P.L. 95-603, is an amalgamation of aspects of the traditional, early vocational rehabilitation and consumer concepts. This concept consolidates in a single state-agency-administered program:

- A concern for the independent living needs of both physically and mentally handicapped people, including children of preschool age and older blind individuals;

- An extension of allowable "comprehensive services for independent living" to include vocational rehabilitation services under title I, and any other services which enhance the ability for an individual to live independently and function within the family and the community;
- A service delivery system which, in addition to the public state agency, may include:
 - other local public agencies
 - private, non-profit organizations
 - public or private non-profit "centers for independent living" which are managed and directed by disabled people;
- A substantial role for disabled people in developing the state independent living plan; and
- A separate "protection and advocacy system" established by the states to insure protection of the rights of handicapped individuals receiving independent living services.

Of particular importance is the different focus on the source of problems and methods for their solution in the vocational rehabilitation and independent living philosophies. The vocational rehabilitation approach considers the problem to consist of an individual's physical or mental impairment which reduces his or her vocational potential, and the solution to entail intervention by a rehabilitation professional to improve the client's physical and/or mental capabilities which ultimately will help the client to obtain gainful employment. The independent living perspective, on the other hand, views the problem to reside in the dependence of the disabled person on care givers and the environment, and the solution to entail instruction in the techniques of self-help and advocacy to remove environmental barriers which ultimately will enable the disabled individual to live more independently.

Based upon the provisions of title VII and the concerns inherent in the evolution of the independent living movement, it is suggested that the Independent Living Program in Virginia should embody the following principles:

- The severely disabled population in need of independent living services will be heterogeneous and will have diverse service needs.
- There should be appropriate consumer involvement in all aspects of an independent living rehabilitation program.
- The Independent Living Rehabilitation Program should be designed to include a diversity of service delivery models.

- The Independent Living Rehabilitation Program should be organized to respond to individualized client goals.
- There should be a clear distinction between the title I and title VII programs, and operational relationships and mechanisms for cross-referral should be clearly defined.
- The Independent Living Rehabilitation Program should be designed to help maximize the severely disabled persons ability to function within the existing system of available services and resources.
- The Independent Living Rehabilitation Program should be organized to utilize fully similar benefits.
- The limited availability of funding for title VII in the near future should be recognized and considered in the development of Virginia's program and funding plans.

Title VII of P.L. 95-602 is comprised of five separate parts. Part A, "Comprehensive Services," authorizes grants to states for the provision of comprehensive rehabilitation services to individuals whose disabilities are so severe that they do not presently have the potential for employment but may benefit from vocational rehabilitation services which will enable them to live and function independently. Funds for Part A grants will be distributed to states on a 90 percent Federal match, with the amount of Federal funds to which each state is entitled being proportional to the relative size of the state's population, but in no instance less than \$200,000.

Part B, "Centers for Independent Living," provides the authority for states to establish Centers for Independent Living, either directly or through contracts with public or non-profit agencies. Part C, "Independent Living Services for Older Blind Individuals," authorizes the provision of grants to states for the provision of independent living services to older blind individuals, to help them to adjust to their blindness by becoming more able to care for individual needs. Part D, "General Provisions," authorizes grants to states for the establishment of protection and advocacy systems to insure the rights of disabled individuals served under title VII take affirmative action to employ and advance in employment qualified handicapped individuals. Part E, "Authorizations," authorizes funds for carrying out parts A, B, C, and D.

At the present time, only funds under Part B have been made available for award to states. To qualify for receipt of these funds, a state must submit a plan as defined for Part A; however, no funds currently are available for Part A grants to implement programs described in these Part A plans. In addition to the legislation itself, the only other authoritative policy statement which has been issued to date regarding the requirements for title VII programs is the proposed regulations (44 CFR 231, November 29, 1979).

According to the legislation, the state agency is allowed considerable latitude in establishing its Part A program. The general purpose of title VII is framed in broad terminology which may be interpreted to include a wide range of service needs and allowable service goals; examples of services which may be provided are included, but no requirement to offer some or all of these services is made; and the requirement to submit a State Plan is included, but all choices regarding the services to be provided and the service delivery mechanism(s) to be used are left to the discretion of the state. Though the proposed regulations introduce additional clarifications of certain service definitions, eligibility requirements and eligibility determination procedures, the major discretion for determining the specific operational details of the Part A program is left with the state agency.

The procedural requirements for the establishment of a Center for Independent Living under Part B are specifically enunciated in the legislation; however, again, the state agency is allowed considerable latitude in establishing its Part A program. The general purpose of title VII is framed in broad terminology which may be interpreted to include a wide range of service needs and allowable service goals; examples of services which may be provided are included, but no requirement to submit a State Plan is included, but all choices regarding the services to be provided and the service delivery mechanism(s) to be used are left to the discretion of the state. Though the proposed regulations introduce additional clarifications of certain service definitions, eligibility requirements and eligibility determination procedures, the major discretion for determining the specific operational details of the Part A program is left with the state agency.

The procedural requirements for the establishment of a Center for Independent Living under Part B are specifically enunciated in the legislation; however, again, the state agency is allowed considerable discretion regarding the target groups to be served and the services to be provided. An, though the proposed regulations stipulate that Centers should provide as many of the identified independent living services as possible, the latitude which the state agency has in establishing its Centers is still considerable.

Though Virginia has submitted an Interim State Plan under Part A, the following actions related to Federal program requirements still remain to be taken in the near future:

- Define and specify the purposes, goals, and objectives of the overall Virginia ILR program and its components;
- Specify the quality, scope and extent of independent living services to be provided;
- Determine an operational definition of the target population(s) to be served, including an order of selection;

- Determine and specify the distinction between title I VR and title VIII ILR programs and develop plans for the organizational relationships and working arrangements between the programs;
- Strengthen the organization of program policy consultation with handicapped consumers, provider groups and others;
- Develop a plan for the utilization of other agencies, organizations and facilities in the provision of ILR services;
- Develop special plans (where appropriate) for the provision of technical assistance to urban and rural poverty areas; and
- Develop goals and plans for the establishment and operation of Independent Living Centers.

In addition to these Federal program and planning requirements, the following state requirements must be reflected in overall department planning:

- Coordination of ILR planning with the reorganization of structure or administrative procedures in response to the "local option" initiative under Section 15.1-36.2, Code of Virginia.
- Coordination of activities of the ILR program with MH/MR Chapter 10 Boards;
- Development of plans for coordination of the ILR program with the Community Rehabilitation Service System (CRSS);
- Development of plans for interagency coordination and linkage between the DRS program ILR and Development Disabilities, Department of Health, Department of Mental Health and Mental Retardation, Department of Welfare, Virginia Commission for the Visually Handicapped, Virginia Employment Commission, Virginia Council for the Deaf, Virginia Housing Development Authority, Office of the Secretary of Transportation, and other appropriate Virginia state agencies; and
- Coordination of plans for the ILR program with the Departmental Management and Planning System Objectives (MAPS) and with state budget constraints.

Additionally, some of the major Part B Federal planning requirements which should be addressed entail:

- Development of a plan to involve handicapped individuals in the policy direction and management of the Center and in employment within the Center;

- Development of plans to insure that the Center offers a combination of the specified ILR services;
- Determination of the group(s) of handicapped individuals to be served by the Center;
- Planning and obtaining of commitments for matching funds for the Center;
- Specification of the relationship of the Center to the overall ILR program.

A SYSTEMATIC APPROACH TO TRAINING NEEDS ASSESSMENT
FOR VOCATIONAL REHABILITATION PROGRAM EVALUATORS

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The assessment of new skill and knowledge needs for human service workers is critical in a period of increasing demand for outcome evaluation, decreasing funds, changing job expectations and future opportunities. Not only must human service workers have the capacity to work with clientele and programs experiencing these pressures, but they must also be able to respond to their own personal situations as they experience increased demands for more effective and diverse functioning. Increased functional requests necessitate the development of a new repertoire of skills or a reorganization of existing skills. In today's world of rehabilitation where budgets are decreasing and case service, personnel and administrative costs continually are rising, the amount of funds allocated for refurbishing, redesigning or replenishing existing skill levels are severely limited. Therefore, it is imperative to accurately assess individual staff training needs and to effectively streamline programs to meet these needs most cost-effectively.

This article presents and discusses a Staff Training Needs Assessment (STNA) strategy which focuses on program evaluation (PE) units in state agencies for vocational rehabilitation (VR). The STNA strategy is similar, however, to training needs identification in any human services area and can be easily modified to assess needs in service, administrative, supervisory or clerical units within the rehabilitation network.

Three assumptions are made with respect to the ensuing presentation:

1. An outside consultant is to be used to perform the assessment.
2. The consultant used is thoroughly knowledgeable of both the responsibility and daily operation of the program evaluation unit and with a VR agency.
3. The consultant is knowledgeable of relevant training programs that are available.

STNA STRATEGY

The consultee-centered administrative consultation model as described by Caplan (1964) is the basic approach emphasized by most consultants undertaking training needs assessments. The primary goal of this system is consultee education or enhancement with regard to general program management or development. In the purest sense the goal is to assist personnel in improving problem solving skills. The STNA approach differs from this model in that the goals are to increase staff capacity for performance of

existing and new functions through the acquisition of specific skills and knowledge. In the STNA approach the consultant functions both as a catalyst to help the consultee determine particular needs and interests (Schein, 1969) and as an expert to provide training information concerning options and providers.

The STNA approach includes three generic procedural steps:

1. determine the skills necessary to complete existing staff functions and emergency tasks;
2. assess the present skill level of the existing staff with regard to current and proposed functions; and
3. develop individual training plans to meet the identified training needs.

The approach fits well into Jackson and MacKinney's (1969) characterization of an empirical assessment in which a systematic attempt is made to collect data on which training needs can be made.

METHOD

As this particular approach was developed with program evaluation units, all tasks identified in this section are worded specifically for program evaluation. The particular methods employed in conducting the STNA are detailed below.

Determine the skills necessary to complete existing staff functions and new tasks. A six-step process is used to arrive at a concise list of skill areas that are required to accomplish the mission of the program evaluation unit.

1. Review the RSA manual chapter, "State Agencies, Studies and Evaluation," for suggestions, guidelines and mandates for Central Office for PE functioning.
2. Review the State Rehabilitation Services Operating Procedures Manual for suggestions, guidelines and mandates for PE unit functioning.
3. Review the Request for Proposals (RFP) for the Model PE Unit Contract to determine its specific requirements.
4. Review the State Rehabilitation Services Technical Proposal in response to the RFP to determine tasks listed beyond contract requirements. (Steps 3 and 4 apply only to states that have Model Evaluation Unit contracts.)

5. Have each member of the project staff enumerate the tasks he/she is assigned in the performance of his/her normal job duties by completing the Task Analysis Form (Figure 1).
6. Meet with the project staff as a group to discover any additional tasks that may have been overlooked in the previous steps.

During this phase of the assessment, the consultant engages in a familiarizing process in which he/she reviews the directives and guidelines related to program mission and complete system mapping activities. System mapping (Brown & Wedel, 1974) refers to the development of an understanding of the area being assessed and the setting in which the activity takes place. The STNA strategy assumes that the consultant comes with this knowledge or has the ability to quickly develop it by reviewing basic program documentation and the individual task analysis supplied by evaluation unit members. Through this process the consultant is able to insure that individual, unit and organizational goals are synchronous thus allowing for the opportunity for training to have its maximum impact.

The final step of involving the entire group in an information discussion of tasks is particularly important. This not only validates the consultant's impressions, but also serves as a social contact that allows the consultant from outside the agency the opportunity to get to know the staff personally, establish credibility and promote open communication. The group meeting also provides the opportunity to explore the staff expectations for training and detail positive training experiences.

Once the tasks are collected and tentatively validated, they are translated into the specific skills that are necessary to accomplish the tasks. This part of the process is the most elusive. The translation of task statements into competency areas requires the consultant to delineate and examine the structural components of each task, determine skill requirements, and regroup the structural components along the skill dimensions.

In the case of the assessment of a program evaluation unit, the skill area grouped for clarity, might include (1) evaluation methods (statistics, research/evaluation designs, data processing, measurement); (2) management (project management, program planning, budgeting, information systems); and (3) dissemination and utilization (technical writing, training, consultation).

Assess the skill level of the existing staff. The following five-step process is used to examine the skill level of the staff.

1. Review the curriculum vitae of each staff member identifying course work relevant to the identified skills.

FIGURE 1

Task Analysis Program
Evaluation Function

1. With which particular program evaluation tasks are you directly involved?
 - A.
 - B.
 - C.
 - D.
2. List the skills that are necessary to complete your task(s). Indicate the level of skill you currently possess for each by circling the appropriate number.

<u>Skills</u>		<u>Level of Skill</u>				
A.	inadequate	1	2	3	4	5 adequate
B.		1	2	3	4	5
C.		1	2	3	4	5
D.		1	2	3	4	5
E.		1	2	3	4	5
F.		1	2	3	4	5

3. If you have identified a need in one or more of the above areas, prior to this evaluation, what specific training options have you considered?
4. List and task related training you may have received to date.

2. Review the work experience and job description of each staff member to determine applicability to the identified skills. (Permission should be obtained from the individual employee.)
3. Meet with the staff as a group to ascertain the group's competence level. This may also be accomplished as a result of the group meeting to complete the first objective. (This is one of the most difficult tasks, as it requires a judgment about the complementary nature of skills and styles of the staff.)
4. Individually interview each staff member to:
 - a. determine interest in performing specific tasks;
 - b. clarify work and curriculum vitae as well as any present training related to specific tasks;
 - c. determine competence to perform specific tasks;
 - d. identify constraints of time and geographic location that may affect the training plan; and
 - e. identify any future educational or training goals that the staff member may have.
5. Examine the skill areas of each staff member consistent with his/her interests, job assignment and indicated training needs.

The above employ several different methods of data collection, thus meeting Nadler's (1977) admonition of excessive reliance on one method. The individual interview does assume major importance for completion of this objective since relationship building is a significant activity at this point. Skills similar to those used in initial interviewing are required and the atmosphere of professional regard and respect must be maintained. In part, this is accomplished by emphasizing the product as being the development of new skills and knowledge to increase effectiveness and capacity. In other words, the consultant needs to emphasize his/her role as a facilitator of the skill building process.

Of the several very difficult activities which are part of this objective, the determination of ability to perform the specified tasks is possibly the most challenging. Although the consultant must be a process expert, it is also essential that he/she be a content expert in order to accomplish this activity. Tasks which routinely confront the staff member, day-to-day operations, and examples of their problem solving or samples of work must be studied to best determine current skill level. The matching of current skill level with required new skill level and the resulting discrepancies determine training needs. The consultant must understand the activities and tasks well enough to (a) know what skills are required; (b) be able to determine how sophisticated the staff member is in a required skill; and (c) know the next level of skill attainment appropriate to the required work task. Other issues concerning the selection and use of consultants have been enumerated by Lippitt (1972) and may be of interest to the reader.

Develop individual training Plans. Before training plans can be proposed, sources of needed training must be identified. The following seven steps are offered as guidelines:

1. examine catalogues of universities and colleges in the area where staff members are located for relevant courses;
2. review Civil Service course offerings;
3. review private vendor course offerings or resource consultants;
4. review the course or workshop offerings of the regional rehabilitation continuing education programs;
5. review professional organization seminar and workshop offerings;
6. review training programs offered by Rehabilitation Research and Training Centers; and
7. survey major universities with rehabilitation counseling programs, for workshop offerings or resource consultants.

Once this information is organized, training plans are prepared which include recommended skill areas for training, alternative plans for receiving training, time frames, geographic and travel conditions (usually based on agency constraints), and cost information. (See Figure 2 for sample form.) The time frames are usually modified by the staff person's professional time constraints, frequently making short-term training more feasible than long term. These recommendations are rank-ordered from most important and accessible to least important and accessible. It is usually helpful to also organize the training recommendations on a grid or chart (Figure 3) so that patterns of training needed by several people or the entire group can be readily observed.

While this approach to training needs assessment is accomplished after the new tasks and program directives are established as a way to maximize program success, it can just as easily be used as a program planning instrument. Needs assessment as a program planning approach or as a diagnostic tool to identify new areas for training not currently being provided are equally important thrusts and may provide direction for future program development activities.

FIGURE 3

Program Evaluation Unit Training Needs Summary

Person 1	Person 2	Person 3	Person 4	Training Categories
	A_{1a}	A_{1b}		A. Evaluation Methods
				1. Statistics
A_2	A_{2a}	A_{2b}	A_{2c}	2. Research/Evaluation Designs
		A_{3a}		3. Data Processing
				B. Management
	B_1		B_1	1. Project Management
B_2				2. Program Planning
B_3				3. Budgeting
	B_4	B_{4a}	B_4	4. Information Systems
				C. Dissemination
	C_1		C_{1a}	1. Technical Writing (Communication & Packaging)
C_2	C_2		C_2	2. Consultation
			C_3	3. Training

May require more in-depth work since the individual is considered a primary resource person for this area
 Table represents minimum training requirements.

CONCLUSIONS

The STNA approach is a reliable way of determining the training needs of a program evaluation unit within a state agency for vocational rehabilitation. The approach has been used by the authors in two such units. Though other approaches may also be viable, the selection of a particular approach should not overshadow the need for conducting such data based training needs assessments.

The assessment of training needs should not be considered a one time project that merely lists recommendations for training. As Brown and Wedel (1974) indicated, "Ideally it is a process of information gathering to diagnose changing requirements of the organization and the people in it and to develop creative responses to the needs as they are discovered." As people, tasks, goals and priorities change, so must the training needs and strategies of the organization change. While the initial process may not be reinitiated, periodic updates to individual training plans must be made. Toward that end the organization needs to recognize and make available an opportunity for individual workers, supervisors and staff development officers to have input into the identification of training needs.

References

- Brown, F.G., & Wedel, K.R. Assessing training needs. Washington, DC: National Training and Development Service Press, 1974.
- Caplan, G. Principles of preventive psychiatry. New York: Basic Books, 1964.
- Jackson, B.B., & MacKinney, A.C. Methods of determining training needs. Personnel, 1959, 36, 60-68.
- Nadler, D.A. Feedback and organization development: Using data based methods. Reading, MA: Addison-Wesley, 1977.
- Pippitt, G.L. Criteria for selecting, evaluating and developing consultants. Training and Development Journal, August, 1972; pp 12-17.
- Schein, E.H. Process consultants: Its role in organizational development. Reading, MA: Addison-Wesley, 1969.

BIBLIOGRAPHY

- Anderson, S., & Ball, S. The profession and practice of program evaluation. San Francisco: Jossey-Bass, 1978.
- Attkisson, C.C., et al. (Eds.) Evaluation of human service programs. New York: Academic Press, 1978.
- Bernstein, I.N., & Freeman, H.E. Academic and entrepreneurial research: The consequences of diversity in Federal evaluation studies. New York: Russell Sage, 1975.
- Bolton, B. Handbook of measurement and evaluation. Baltimore: University Park Press, 1976.
- Brown, G.F., & Wedel, K.R. Assessing training needs. Washington, D.C.: National Training and Development Service Press, 1978.
- Campbell, D.T., & Cook, T.D. The design and analysis of quasi-experiments for field settings. Chicago: Rand McNally, 1978.
- Cero, F.G. (Ed.) Readings in evaluation research (2nd. ed.). New York: Russell Sage, 1977.
- Cook, D.W. & Cooper, P.G. Fundamentals of evaluation research in vocational rehabilitation. Fayetteville, AR: Arkansas Rehabilitation Research & Training Center, 1978.
- Cook, T.D., & Reichardt, C.S. Qualitative and quantitative methods in evaluation research. Beverly Hills: Sage Publication, 1979.
- Coursey, R.D. (Ed.) Program evaluation for mental health: Methods, strategies, and participants. New York: Grune & Stratton, 1977.
- Cronbach, L.J. & Associates. Toward reform of program evaluation. San Francisco: Jossey-Bass, 1980.
- Davidoff, I., Guttentag, M., & Offut, J. (Eds.) Evaluating community mental health services: Principles and practice. Washington, D.C.: U.S. Government Printing Office, 1978.
- Epstein, I., & Tripodi, T. Research techniques for program planning, monitoring and evaluation. New York: Columbia University Press, 1977.
- Fitz-Gibbon, C.T. & Morris, L.L. How to design a program evaluation. Beverly Hills: Sage Publications, 1979.

- Fitz-Gibbon, C.T., & Morris, L.L. How to measure program implementation. Beverly Hills: Sage Publication, 1978.
- Fitz-Gibbon, C.T., & Morris, L.L. Evaluators Handbook. Beverly Hills: Sage Publication, 1978.
- Henerson, M.E., Lyons, L.N., & Fitz-Gibbon, C.T. How to measure attitudes. Beverly Hills: Sage Publications, 1978.
- Harrisor, A.W., Jr. Evaluation in legislation. Beverly Hills: Sage Publications, 1979.
- Manner, J.V. The process of program evaluation. Washington, D.C.: National Training and Development Service Press, 1973.
- Perloff, R. Evaluator interventions: Pros and cons. Beverly Hills: Sage Publications, 1979.
- Reagles, K.W. A handbook for follow-up studies in the human services. New York: ICD Rehabilitation and Research Center, 1979.
- Rich, R.F. Translating evaluation into policy (Vol. 3). Beverly Hills: Sage Publications, 1979.
- Robinault, I.P. Program planning & evaluation: Selected topics for vocational rehabilitation. New York: ICD Rehabilitation and Research Center, 1975.
- Rossi, P.N., Freeman, H.E., & Wright, S.R. Evaluation: A systematic approach. Beverly Hills: Sage Publications, 1979.
- Schulberg, H.C., Sheldon, A., & Baker, F. Program evaluation in health fields. New York: Behavioral Publications, 1979.
- Sze, W.C., & Hopps, J.G. Evaluation and accountability in human service programs (2nd. ed.). Cambridge, MA: Schenkman, 1978.
- Suchman, E. Evaluative research. New York: Russell Sage, 1967.
- Wholey, J.S. Evaluation: Promise and performance. Washington, D.C.: The Urban Institute, 1979.